Available online at www.sciencedirect.com
ScienceDirect
Journal of Forensic and Legal Medicine 14 (2007) 72–74
JOURNAL OF FORENSIC AND LEGAL MEDICINE
www.elsevier.com/jflm

Original communication

The use of the super accelerated hepatitis B vaccination regimen in a north London sexual assault referral centre (SARC)

Syma M. Ahmed *, Muriel Volpellier, Greta Forster

St. Mary's Hospital, Haven Paddington, Praed Street, London, United Kingdom

Received 3 October 2005; received in revised form 25 January 2006; accepted 10 February 2006
Available online 21 August 2006

Abstract

The super accelerated hepatitis B vaccination regimen was offered to survivors of sexual assault, attending the Haven Paddington, who were at possible risk of contracting the virus [Clinical Effectiveness Group. National Guideline on the Management of Adult Victims of Sexual Assault. Sex Trans Inf 2001;(Suppl. 1):S82–S84]. The uptake and completion rates of the vaccination over two time periods from March 2004 and January 2005 were audited, using 150 clients in each group. More clients accepted the initial vaccination at the time of the forensic medical examination in the second audit when compared with the first [80 clients (73%) and 73 clients (71%), respectively]. Similar numbers of clients completed the course during both study periods [34 clients (47%) and 30 clients (38%), respectively]. Of 65% of clients who had their hepatitis B surface antibody titre checked at three months during the first audit, 77% had protective levels [>10 mIU/ml]. There was little difference following the second audit, where 75% of those who had their antibody checked were found to have protective levels. Our study has shown that this client group accepted the super accelerated hepatitis B vaccination regimen. Early serological response compares well with published data for this vaccination regimen in other settings.

Keywords: Hepatitis B; Super accelerated vaccination regimen; Anti HBs levels >10 mIU/ml

1. Introduction

The Haven Paddington is a sexual assault referral centre, which opened in March 2004. It provides a forensic service and after care for victims of sexual assault across northwest London.

There are many sequelae following sexual assault. These include physical and genital injuries, and sexually transmitted infections, including hepatitis B.

Hepatitis B vaccination is offered to all non-immune victims of sexual assault, who may be at risk of contracting hepatitis B.[1] Since hepatitis B has a long incubation period of 40–60 days, the vaccination course may of value up to six weeks after the event. Antibody levels can be checked between 4 and 12 weeks after the final vaccination. Protection can be conferred with hepatitis B surface antibody (anti HBs) levels of greater than 10 mIU/ml.[2]

Hepatitis B virus infection is caused by an hepadna (DNA) virus. It is endemic worldwide, but has high prevalence rates in Africa, South East Asia, Central and South America and southern Europe. In the UK, carriage varies from 0.01% to 0.04% in blood donors to >1% in intravenous drug users and homosexual (gay) men.[3] In a study carried out by Hahne et al., the annual incidence of hepatitis B infection in England and Wales between 1995 and 2000, was found to be 7.4 per 100,000.[4]

Transmission occurs through sexual intercourse, particularly in unvaccinated or non-immune gay men[2] and heterosexual contact (e.g. 18% infection rates for regular partners of patients with acute hepatitis B).[5–7] Hepatitis B is spread via the intravenous route (blood, blood products, needle sharing by intravenous drug users), needlestick injuries and vertical transmission from an infected mother to infant.

* Corresponding author. Tel.: +44 207 8861101/07984617662; fax: +44 2078861805.
E-mail address: syma4@hotmail.com (S.M. Ahmed).

1353-1131/$ - see front matter © 2006 Elsevier Ltd and AFP. All rights reserved.
doi:10.1016/j.jcfm.2006.02.018

There is also a risk of contracting the infection sporadically in children in countries where hepatitis B virus infection is endemic and in institutions for learning difficulties.[2]

There are three hepatitis B immunisation schedules available for use. The longest established regimen is the 0, 1 and 6 month schedule. This regimen has more time between the second and third doses and so may take longer to confer protection. There is poor uptake of the six month dose in the clinical setting. It does, however, produce higher anti-HBs titres at seven months.[2]

The second is the accelerated schedule with immunisation at 0, 1, 2 and 12 months. This regimen provides early immunity and better patient compliance. However, anti-HBs titres are lower in the first year than those of the 0, 1 and 6 month regimen.[2]

The third is a super accelerated ultra-rapid 0, 7 and 21 day regimen, with a fourth dose recommended at 12 months. This regimen, using Engerix B (1 ml of 20 μg) is used at the Haven Paddington. This schedule provides rapid immunity, is a short course and thus is expected to show better patient compliance, especially in a sexual assault referral centre setting. In the first year antibody titres are low, but protection is adequate in the immunocompetent.[8] There are however, little published data regarding this regimen.

We carried out an audit to determine the uptake of the super accelerated hepatitis B vaccination course of Engerix B, in the Haven Paddington. Engerix B is the only vaccine recommended for use with the super accelerated regimen.

2. Methods

This was a retrospective review of case notes. Data were collected manually from the case notes of 150 patients aged 16 years and over, who attended the Haven Paddington for a forensic examination and follow-up over the two time periods from (1) March 2004 and (2) January 2005. Details of the patient's age, first injection, the number of Engerix B injections administered, follow-up at the Haven, serological testing approximately eight weeks after the final injection and outcome were collected. The appointment during which the serology was taken coincided with the patient returning for a 12 week check up, post assault. At this visit, serology for HIV, syphilis, hepatitis C antibody and hepatitis B are offered.

The first dose of vaccine was given at the forensic examination and subsequent appointments were made for patients to attend the Haven follow-up clinic at 7 and 21 days in order to complete the course. At the first follow up, baseline serology is obtained for syphilis, hepatitis C and hepatitis B. The hepatitis B vaccination course was discontinued if there was evidence of past exposure. If appropriate, patients were offered follow-up elsewhere to complete the course, for example, via their GP, a local genitourinary medicine clinic or another Haven. We attempted to obtain information regarding clients who had been followed up elsewhere. This was, however, not possible.

3. Results

During the first audit, 142 female and 8 male clients aged 16 and over attended for a forensic medical examination. 15 (10%) had already been vaccinated against hepatitis B, none of whom received a booster at the time of the forensic examination. The vaccination regimen was not discussed or not applicable in 30 (20%) cases. One patient had hepatitis B virus infection and the forensic examination was discontinued in another case. Of the 103 eligible clients, 30 (29%) declined the vaccine, leaving 73 (71%) clients who had the first dose of Engerix B at the time of the forensic examination.

Of the 73 clients commencing the super accelerated hepatitis B vaccination, 11 (15%) did not attend for follow up. 18 (25%) were followed up elsewhere, five (7%) completed two injections at the Haven, one (1%) had two injections and declined the third dose and four (5%) clients were found to be seroprotected after one injection, following baseline serology. Therefore 34 (47%) clients completed all three injections. Of these, 22 (65%) had their titre checked, 17 (77%) of whom were found to have protective levels of hepatitis B surface antibody (anti HBs >10 mIU/ml) (Table 1).

During the second audit, 141 female and 9 male clients attended for a forensic medical examination. 25 (17%) had already been vaccinated against hepatitis B, of whom six (24%) received a booster of the Engerix B vaccine at the time of the forensic medical examination. Vaccination was not discussed or not applicable in 16 clients (11%). For one case the forensic examination was discontinued.

Of the 108 eligible clients, 28 (26%) declined the vaccination. 80 patients (73%) had their first dose of Engerix B at the time of the forensic medical examination. 19 (24%) of these did not attend for follow up. 24 (30%) were followed up elsewhere. One had one dose and declined the course, one had two doses and wanted to complete the course with her GP. Two had two doses and were found to be seroprotected and three did not attend after two injections.

Of 30 (38%) patients who completed the vaccination course at the Haven Paddington, 16 (53%) had their titre checked. Twelve (75%) of these were found to have protective levels (>10 mIU/ml) (Table 1). One patient had her titre level checked. The result was unavailable for technical reasons.

Table 1
Comparison of uptake of the hepatitis B vaccination and outcomes of the first and second audit

Outcome	March 2004		January 2005	
	$n = 150$	%	$n = 150$	%
Previously vaccinated	15	10	25	17
Not applicable/not discussed	30	20	16	11
Declined	30	29	28	26
Follow up elsewhere	18	25	24	30
First dose at the forensic examination	73	71	80	73
Completed course at the Haven	34	47	30	38
Titre checked	22	65	16	53
Seroprotected	17	77	12	75

4. Discussion

The super accelerated hepatitis B vaccination regimen is offered to all non-immune victims of sexual assault up to six weeks after the incident. Seroprotection can be conferred with an anti HBs titre >10 mIU/ml.

Similar numbers of clients completed the course at the Haven Paddington during both study periods. During the second audit period, a greater number of clients had their first injection at the time of the forensic medical examination. There was also, however, an increase in the number who did not attend for follow up in the second study period, when compared with the first.

Clients attending the Haven Paddington are victims of sexual assault. As a result, they can experience many health outcomes, including emotional and social disturbances, mental health problems and physical symptoms. All of these can contribute to reasons why clients default from follow up.

The outcome of serological testing 12 weeks after commencing the vaccination course shows that 77% in the first audit and 75% in the second already had a measurable level of hepatitis B surface antibody. This compares with the study by Marchou et al. in 1995, where levels of >10 mIU/ml were achieved in 70%, 49 days after the third vaccine.[9]

The second audit shows that more clients had already been vaccinated prior to attending the Haven when compared with the first. This could have been as a result of increased awareness of hepatitis B and vaccination in the community or a vulnerable population who were eligible for vaccination in other settings.

The re-audit was carried out to ensure continued acceptance of the vaccination and that completion rates remained similar to the first study. Following results from the first audit, a hepatitis B information leaflet was introduced and made available to clients attending the forensic medical examination and follow up at the Haven.

Future audit will be helpful to confirm similar levels of acceptance of the vaccination regimen. It may, however, be difficult to increase targets for completion of the course. Location of follow up, default rates, reasons for patients declining the vaccination and improved documentation (details of not applicable/not discussed) need to be considered. The audit has shown that this client group accepted the super accelerated hepatitis B vaccination regimen, with confirmed levels of protection.

This audit was presented at the World Police Medical Officers Seventh International Conference on Clinical Forensic Medicine and the Association of Forensic Physicians, 9–13 May 2005.

References

1. Clinical Effectiveness Group. National guideline on the management of adult victims of sexual assault. *Sex Trans Inf*(Suppl. 1): S82–S84.
2. Clinical Effectiveness Group. National guideline on the management of the viral Hepatitides A, B and C. *Sex Trans Inf* 1999;**75**(Suppl. 1): S57–S64. Available from: www.bashh.org.uk/guidelines/2005.
3. Gay NJ, Hesketh LM, Osborne KP, et al. The prevalence of hepatitis B infection in adults in England and Wales. *Epidemiol Infect* 1999;**123**:89–93.
4. Hahne S, Ramsay M, Balogun K, Edmunds WJ, Mortimer P. Incidence and routes of transmission of hepatitis B virus in England and Wales, 1995–2000: implications for immunisation policy. *J Clin Virol* 2004;**29**:211–20.
5. Struve J, Giesecke J, Lindh G, et al. Heterosexual contact as a major route for transmission of acute hepatitis B amongst adults. *J Infect* 1990;**162**:111–21.
6. Balogun MA, Ramsay ME, Fairley CK, Collins M, Heptonstall J. Acute hepatitis B infection in England and Wales: 1985–96. *Epidemiol Infect* 1999;**122**:125–31.
7. Huo TI, Wu JC, Huang YH, et al. Evidence of transmission of hepatitis B to spouses from sequence analysis of the viral genome. *J Gastroenterol Hepatol* 1998;**13**:1138–42.
8. Nothdurft HD, Dietrich M, Zuckerman JN, et al. A new accelerated vaccination schedule for rapid protection against hepatitis A and B. *Vaccine* 2002;**20**:1157–62.
9. Manchou B, Excler J-L, Bourderioux C, et al. A 3-week hepatitis B vaccination schedule provides rapid and persistent protective immunity: a multicenter, randomized trial comparing accelerated and classic vaccination schedules. *J Infect Dis* 1995;**172**:258–60.